

2015

iSEMC

The Revolutionary Video Wall Controller

The most versatile architecture for video
wall controllers in the industry

HHSD Technology
Feb. 08, 2015

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I. INTRODUCTION

Since 2009, Our teams of founders and developers have been concentrating on video and graphic processing, control and display in the audiovisual field. The corporate philosophy of isemc is to become a world-leading innovator in the area of visualization application and visual resource management.

Our Video Wall Controller product family provides highly expandable and flexible solutions for video display walls, particularly for large-scale multi-screen systems. Capable of integrating any type of video and data source on any display wall configuration, our products and solutions are widely used in areas as diverse as **Video Conference Rooms, Public Utility Control Centers, Intelligent Traffic Management Centers, Security and Surveillance Facilities, Military Command and Control Centers, Energy Management Rooms, Process Control Rooms, Call Centers, Board Rooms, Network Operation Centers (NOC), Financial Management Control Rooms, and including the high-end Residential Market, for example high-end home theaters.**

Our Video Wall Controller product family is available in six chassis sizes: iSEMC T2U, T3U, T6U, T8U, T12U, T24U

II. CHASSIS

Product Model	Chassis Size	Input	Output	Max. HD Inputs	Max. Displays
iSEMC T2U	2U	3	2	12	8
iSEMC T3U	3U	6	2	24	8
iSEMC T6U	6U	8	4	32	16
iSEMC T8U	8U	10	9	40	36
iSEMC T12U	12U	21	18	84	72
iSEMC T24U	24U	38	36	152	144



III. PRODUCT FEATURES

Ultra-high Performance

Our Video Wall Controller adopts FPGA (Field Programmable Gate Array) hardware graphics parallel processing and digital signal processing (DSP) technology to construct distributed and modularized hardware architecture. Its purpose-built hardware and embedded operating system are uniquely optimized for both mission-critical reliability and ultra-high-performance. Thanks to its implementation of cutting-edge, parallel processing hardware systems, Video Wall Controllers offer an astonishing 10Gbps of bandwidth per slot. Regardless of configuration requirement size, it provides fully real-time DVI/HDMI/RGB/SDI frame rates because of its truly non-blocking communication architecture.

- Up to 38x input slots and 36x output slots
- Up to 152x DVI, HDMI, HDBase-T, RGB or SDI inputs simultaneously (High-Definition video or WUXGA graphics)
- Up to 144-screen video wall
- Input resolution up to 4088×4088 pixels by Dual-Link DVI Input Capture Card
- Max Output resolution of 3840×2160@30Hz.

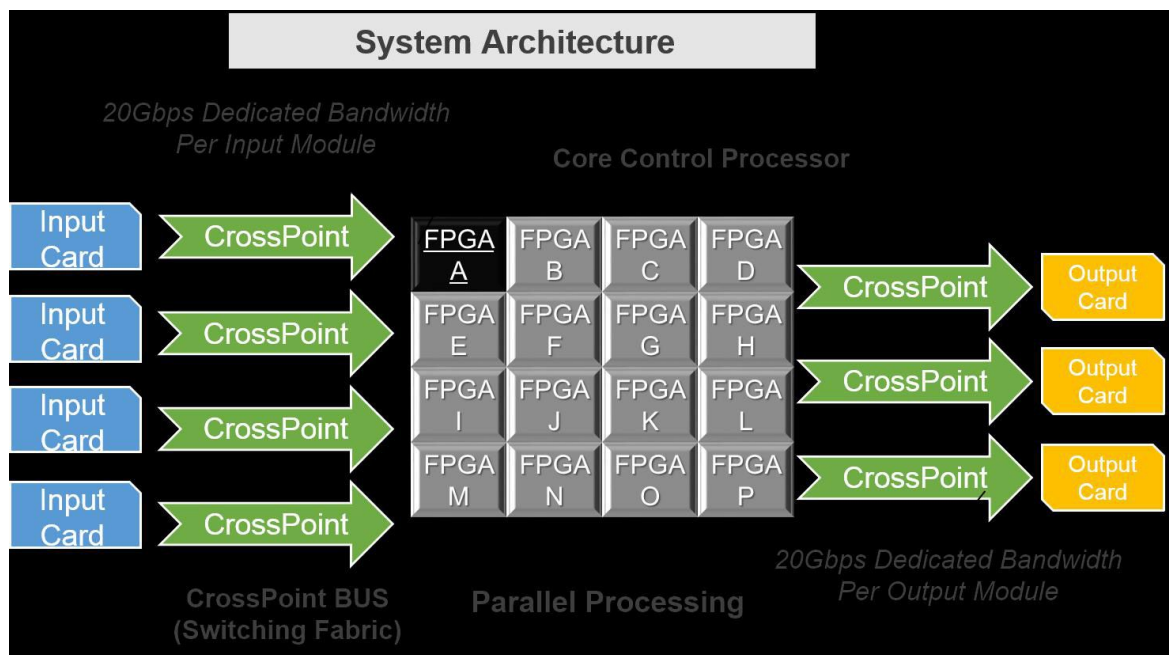


Figure 3.1 Real Time and High Processing Capabilities

System Availability, Reliability and Robustness

The isemc Video Wall Controller has been designed, developed and optimized for continuous 24/7 operation. It features a variety of redundant components, including hot-swappable N+1 (up to 4 PSU, and 1x default PSU) redundant power supplies, hot-swappable chassis cooling fans, and hot-swappable input and output cards.



Figure 3.2 T6U Video Wall Controller

To build a video wall controller or processor system, most competitors employ industrial PC chassis architecture which operates in a Microsoft Windows operating system. By contrast, Our video wall controller operates in an embedded operating system (EOS). As a real-time operating system (RTOS), it is developed uniquely for video wall systems and their applications. As a result, isemc has several distinct advantages:

- Faster booting speed (<15 seconds)
- None of Microsoft OS's vulnerabilities or third-party software bugs that lead to video wall controller system crashes (blue screen). Due to our OS being a closed system, it experiences none of the risks associated with the installation of third-party applications.
- No computer viruses
- No maintenance of computer OS and hard drives



A video wall running Windows OS and employing an industrial PC architecture crashes. Due to its superior creative design, Our video wall controller possesses no such vulnerability.

Diversity of Input and Output Sources

Our video wall controllers support every major type of video and data source on any display configuration. Integrators and other users can flexibly choose the appropriate input signals.

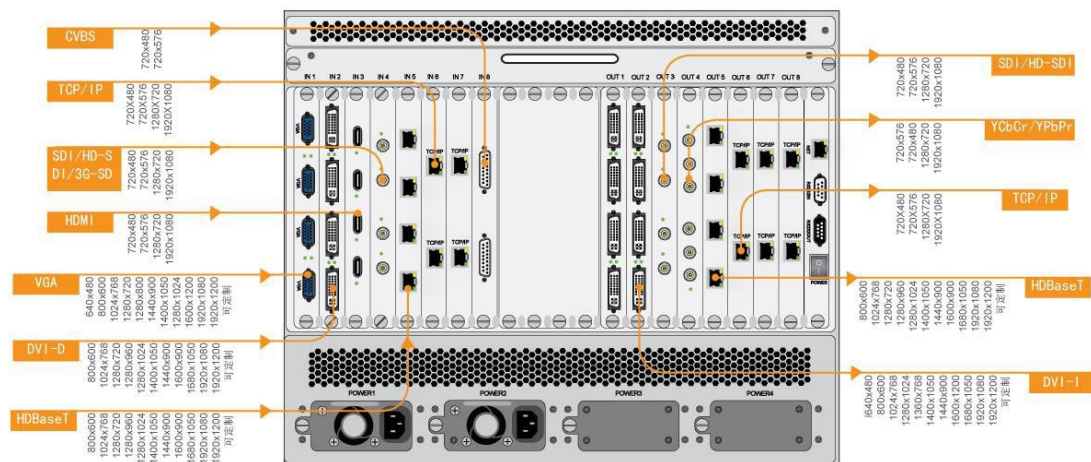
isemc's hot-swappable cards and optional PSU include:

Input Cards (Optional)		
CVBS	Dual-Channel CVBS input card	Quad-Channel CVBS input card
	8-Channel CVBS input card	16-Channel CVBS input card
YPbPr	Dual-Channel YPbPr input card	Quad-Channel YPbPr input card
VGA	Dual-Channel VGA input card	Quad-Channel VGA input card
DVI	Single-Channel DL-DVI input card	*Dual-Channel DL-DVI input card
	Dual-Channel DVI input card	Quad-Channel DVI input card
HDMI	Dual-Channel HDMI input card	Quad-Channel HDMI input card
Twist Pair	Dual-Channel TP input card	*Quad-Channel TP input card
HDBaseT	Quad-Channel HDBaseT input card	
VNC	*Dual-Channel VNC input card	
IP Decoder	*Dual-Channel IP Streaming Decoder input card X10/U20 (New version: U20)	
SDI	Dual-Channel SDI input card	Quad-Channel SDI input card
SD	*SD Background Card (inserted in the first slot)	
Output Cards (Optional)		
CVBS	*Quad-Channel CVBS output card	
DVI	Dual-Channel DVI output card T10/T20	
DVI	*T20 (supports multiple video walls)	
	Quad-Channel DVI output card T10/T20 (*T20 supports multiple video walls)	
	Quad-Channel DVI output card- Galileo™ (used for LED screens)	

HDMI	*Single-Channel 4K HDMI output card Quad-Channel HDMI output card
HDBaseT	Quad-Channel HDBaseT output card T10/T20 (*T20 supports multiple video walls)
Function Cards (Optional)	
Previewing	*Network Previewing card
Monitoring	*Confidence Monitoring card
280W	Redundant PSU (200V-240V, for 8U, 12U and 24U)
300W	Redundant PSU (100V-240V, for 8U, 12U and 24U)
450W	Redundant PSU (100V-240V, for 8U, 12U and 24U)
Accessories (Optional)	
Adaptor	DB15 to 8-channel BNC adaptor DVI to VGA adaptor DVI to HDMI adaptor HDMI to DVI adaptor

“”Contact our sales department for more details and availability.*

Our input module cards provide a variety of standard and high definition capture capabilities. Our capture cards include Single or Dual-Link DVI, SDI, HD-SDI, RGB, Component YPbPr or S-Video, and Composite video.



Easy Expandability

A majority of competitive products employ a standard industrial PC chassis built to order. As a result, when users wish to expand their video wall systems by adding input or output cards, or when modular cards are damaged, they must upgrade the entire system. Our video wall controllers, however, contain an element of

custom design where if a user wishes to further integrate his system, or if cards are damaged or disabled, they can be easily swapped out and a new one inserted in a matter of seconds. In this way, our video wall controllers are able to successfully support users in reducing TCO (Total Cost of Ownership), and meet customers' ever-increasing usability and economic demands.

Powerful Video and Image Processing

All input cards employ our proprietary technology, ensuring that each card can transmit and display input

signals at full frame rates (no dropped frames) regardless of output window size. In addition, each data or video source can be simultaneously placed into four separately positioned and scaled windows. Video and images can be displayed anywhere, at any size, within or across screens, in correct aspect ratio or stretched to fit; in whole or zoomed to emphasize details. These features include:

Overlap	PIP	Multiple PIPs
Borders and Labels	Smooth Motion	Scaling
Zooming	Panning	

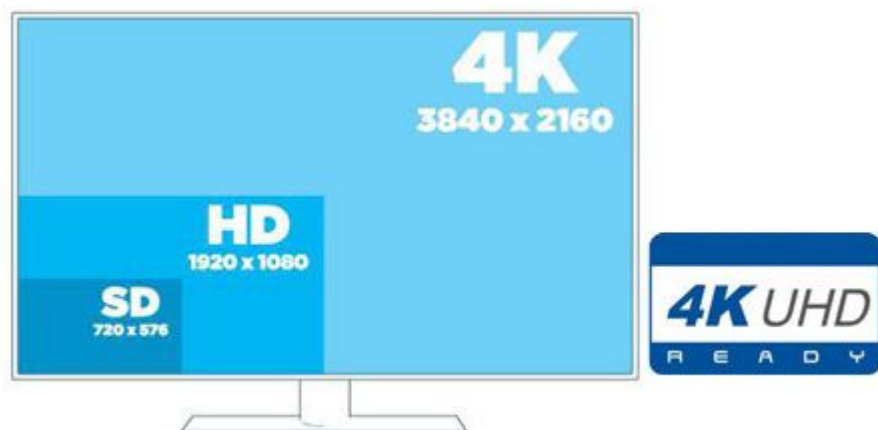
**PIP: Picture In Picture*

4K Ultra HD Support

Our video wall controllers support 4K resolution output, which means users can connect a 4K HDMI Output Card to an Ultra High Definition TV (UHDTV) or a 4K projector. Four 1080p Windows or 16 standard video windows can be easily opened on a UHDTV. The card supports HDMI 1.4, producing a max resolution of up to 3840 x 2160 @ 30Hz.

Dual-Link DVI Input (Capture) Card

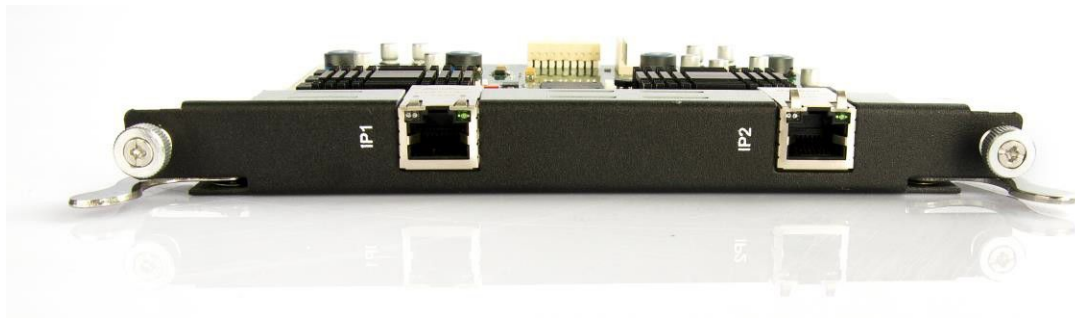
Our Dual-Link DVI Input (Capture) card is a single-channel or Dual-channel Dual-Link capture card. With a maximum input resolution of up to 4088×4088 pixels and a customizable input resolution, any DVI source can be captured. The use of multiple Dual-Link DVI Input (Capture) cards allows ultra high resolution sources to be displayed pixel-pixel on a large video wall.



Dual IP Streaming Decoder Card

Our Dual IP Streaming Decoder Card (New version U20) provides support for the display of both high definition and standard definition IP video streams in MPEG-2, MPEG-4, and H.264 formats, and supports RTSP protocols.

The Dual IP Streaming Decoder Card (New version U20) has a 2 GB Ethernet network interface (10/100/1000MBase-T), ensuring sufficient bandwidth for each decoder to handle with ease any stream bandwidth up to 20 Mbps. The single (1x) Ethernet port supports two (2x) channels 1080P, eight (8x) channels 720P, eighteen (18x) channels D1 or thirty-two (32x) channels CIF.



Frame Synchronization and Double-Buffering Techniques

isemc utilizes the most advanced FPGA and DSP technologies, capable of driving four displays at up to 1920x1200 pixels. With 10 GB per second of single slot bandwidth and 1GB of GDDR3 memory per card, we can simultaneously render complex application data while displaying multiple video or computer inputs.

Frame tearing occurs when a video feed to different display devices in a video wall are not in sync with the display's refresh. During video motion, screen tearing creates a torn look as edges of objects (such as an image of a wall or a tree) fail to line up. Frame Tearing can occur with most common display technologies and video cards and is most noticeable in horizontally-moving visuals, such as in slow camera pans in a movie, or classic side-scrolling in video games. it employs original Frame Synchronization and Double-Buffering Techniques, so all outputs are synchronized to eliminate "frame tearing" between displays.

Frame Synchronization and Double-Buffering Techniques



Frame Tearing

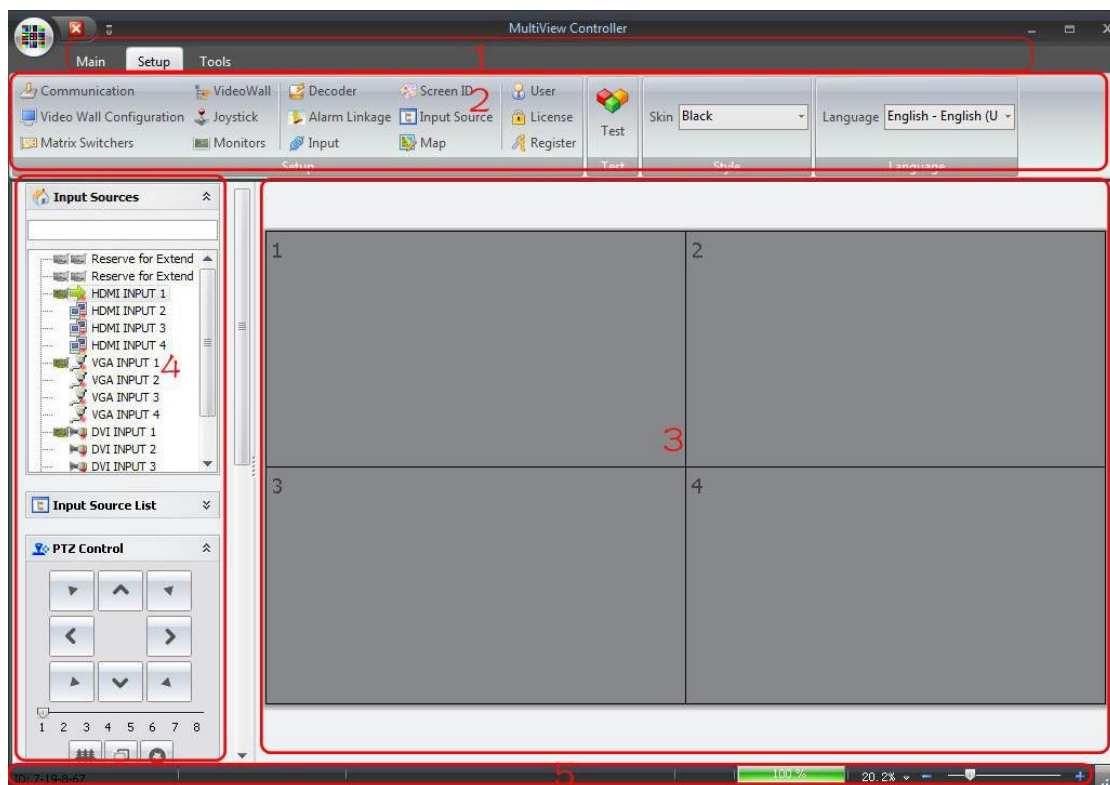
Without Frame Synchronization and Double-Buffering Techniques



After employing Frame Synchronization and Double-Buffering Techniques

Videowall Controller Software (PC version)

The Videowall Controller Software is our video wall controller's GUI (Graphical User Interface). It is a complete, integrated, and intuitive software solution for the control and management of the video wall controller. (For more details, please refer to our **VWC Software User Manual**)



Our VWCs also support iOS and Android apps.

IV. OPTIONAL CARDS SPECIFICATIONS

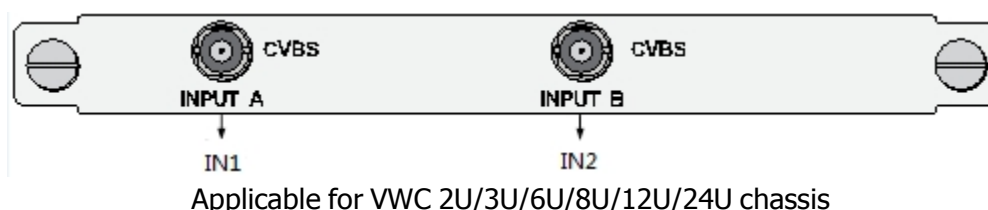
Our optional input and output cards include:

Input Cards (Optional)		
CVBS	Dual-Channel CVBS input card	Quad-Channel CVBS input card
	8-Channel CVBS input card	16-Channel CVBS input card
YPbPr	Dual-Channel YPbPr input card	Quad-Channel YPbPr input card
VGA	Dual-Channel VGA input card	
DVI	Single-Channel DL-DVI input card	*Dual-Channel DL-DVI input card
	Dual-Channel DVI input card	Quad-Channel DVI input card
HDMI	Dual-Channel HDMI input card	Quad-Channel HDMI input card
Twist Pair	Dual-Channel TP input card	*Quad-Channel TP input card
HDBaseT	Quad-Channel HDBaseT input card	
VNC	*Dual-Channel VNC input card	
IP Decoder	*Dual-Channel IP Streaming Decoder input card X10/U20 (New version: U20)	
SDI	Dual-Channel SDI input card	Quad-Channel SDI input card
SD	*SD Background Card (Inserted in the first slot)	
Output Cards (Optional)		
CVBS	*Quad-Channel CVBS output card	
DVI	Dual-Channel DVI output card T10/T20 (*T20 supports multiple video walls)	
	Quad-Channel DVI output card T10/T20 (*T20 supports multiple video walls)	
	Quad-Channel DVI output card- Galileo™ (Used for LED screens)	
HDMI	*Single-Channel 4K HDMI output card	
	Quad-Channel HDMI output card	
HDBaseT	Quad-Channel HDBaseT output card T10/T20 (*T20 supports multiple video walls)	

""Contact our sales department for more details and availability.*

PART I: INPUT CARDS

1. Dual-Channel CVBS input card



The Dual CVBS Input Card is applicable for capturing video, supporting PAL and NTSC formats, as well as the adjustment of brightness, contrast, horizontal position, vertical position, horizontal width, and vertical height.

Type	Description	
Connector	BNC	
Specification	Input Signal	PAL, PAL-M, PAL-N, PAL-60, NTSC, NTSC-443, SECAM
	Adjustment	Brightness: 0-100; Contrast: 0-100 Horizontal position or width; Vertical position or height

	Level	CVBS: 1.0Vp-p
	Impedance	75 Ohm
	Output Channels	Input slots x 2
	Consumption	<15.5W
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

2. Quad-Channel CVBS input card



Applicable for VWC 2U/3U/6U/8U/12U/24U chassis

The Quad-CH CVBS Input Card is able to capture PAL and NTSC format signals and supports the adjustment of chromatic aberration, brightness, contrast, horizontal position/ width and vertical position/ height.

Supports 4 channels and is NTSC/PAL auto-adaptive

Supports 3D Comb Filter and 3D de-interlacing

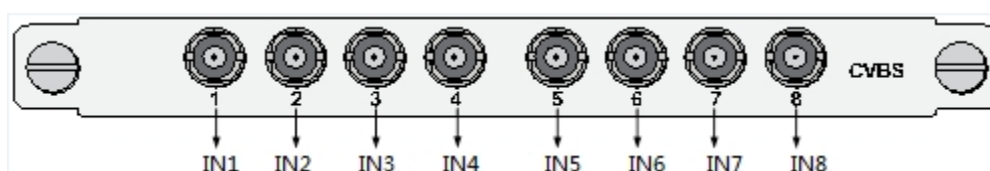
Supports manual adjustments of Brightness and Contrast

Supports auto adjustments of Chroma, Gray and Saturation

Supports user-defined flag setting

Type	Description	
Connector	Quad-Channel BNC	
Specification	Input Signal	PAL, PAL-60, PAL-M and PAL-N; NTSC and NTSC-443; SECAM
	Adjustments	Brightness: 0-100; Contrast: 0-100 horizontal position/ width and vertical position/ height
	Level	Y: 1.0 Vp-p; Cb/Cr(Pb/Pr): 0.7 Vp-p
	Impedance	75 Ohm
	Channels	Slot x 4
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

3. 8-Channel CVBS input card



The 8-Channel CVBS Input Card is capable of capturing PAL and NTSC format signals and supports the adjustment of chromatic aberration, brightness, contrast, horizontal position/width and vertical position/height.

Type	Description	
Connector	4-Channel BNC	
Specification	Input Signal	PAL and NTSC
	Adjustments	Brightness: 0-100; Contrast: 0-100 horizontal position/ width and vertical position/ height
	Level	CVBS: 1.0Vp-p
	Impedance	75 Ohm
	Channels	Slot x 8
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

4. 16-Channel CVBS input card



The 16-Channel CVBS Input Card is capable of converting DVD composite signals to digital signals, while supporting PAL and NTSC formats (auto-adaptive). Because of its modular design it is more easily integrated into users' existing systems.(Attention: *Requires DB15 to 8BNC adaptor**.)

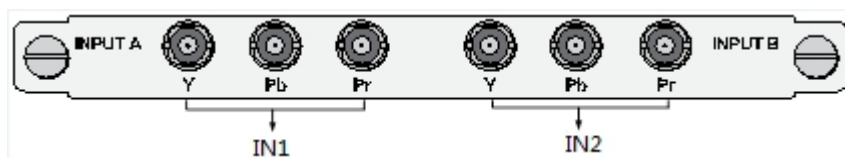


Adaptor*: DB15 to 8x BNC adaptor

Type	Description	
Connector	DB15 Male (Need DB15 to 8BNC adaptor)	
Specification	Input Signal	PAL/ NTSC/ SECAM
	Resolution	720 x 480 NTSC; 720 x 576 PAL
	Level	1.0Vp-p
	Impedance	75 Ohm
	Consumption	<24W

	Channels	16
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

5. Dual-Channel YPbPr input card



The Dual YPbPr Input Card is able to capture component signals and support the adjustment of chromatic aberration, brightness, contrast, horizontal position/width and vertical position/height. This card adopts double buffering technology to avoid asynchronous states and is capable of auto-sensing input signal formats.

ATTENTION: When connecting this input card to the source, use high-quality VGA cabling. For long distances, employ a VGA extender or amplifier.

Type	Description	
Connector	2x YPbPr	
Specification	Input Signal	480i@60, 576i@50, 480p@60, 576p@50, 720p@60, 720p@50, 1080p@60, 1080p@50, 1080i@60, 1080i@50
	Adjustments	Brightness: 0-100; Contrast: 0-100 horizontal position/ width and vertical position/ height
	Level	Y: 1.0 Vp-p; Cb/Cr(Pb/Pr): 0.7 Vp-p
	Impedance	75 Ohm
	Channels	2
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

6. Quad-Channel YPbPr input card



The Quad-Channel YPbPr Input Card is able to capture component signals while supporting the adjustment of chromatic aberration, brightness, contrast, horizontal position/width and vertical position/height. This card adopts double buffering technology to avoid asynchronous states and is capable of auto-sensing input signal formats.



Adaptor: For DB15 to BNC adaptor, connectors #2, #3, and #4 are for channel #1; connectors #6, #7 and #8 are for channel #2. (Fig 1- DB15 to BNC adaptor)*

Type	Description	
Connector	2x DB15 (Need DB15 to 8BNC adaptor)	
Specification	Input Signal	480i@60, 576i@50, 480p@60, 576p@50, 720p@60, 720p@50, 1080p@60, 1080i@60, 1080i@50
	Adjustments	Brightness: 0-100; Contrast: 0-100 horizontal position/ width and vertical position/ height
	Level	1.0 Vp-p
	Impedance	75 Ohm
	Channels	4
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

7. Dual-Channel VGA input card

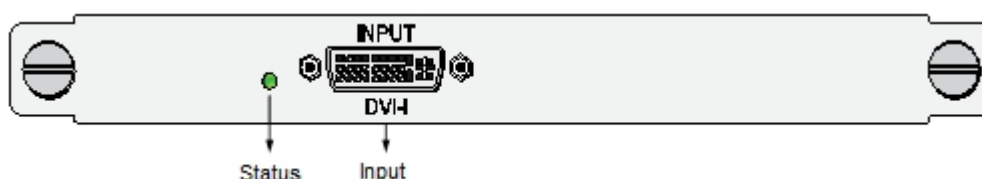


The Dual-Channel VGA Input Card is able to convert PC VGA signals to digital signals. It Supports up to 1920 x 1200 resolution, while auto-sensing the dynamic switching of different resolutions and optimizing their quality. Because of its modular design, it is more easily integrated into users' existing systems.

Type	Description	
Connector	15 Pin D-sub, Male	
Specification	Input Signal	RGBHV
	Level	0.7Vp-p

	Impedance	75 Ohm
	Resolutions	
	1920 x 1200@60 Hz	1440 x 900@60Hz CVT
	640 x 480@60Hz DMT	1024 x 768@60Hz DMT
	1920 x 1080@60Hz Red	1920 x 1200@60Hz CVT
	800 x 600@60Hz DMT	1440 x 900@60Hz DMT
	1280 x 800@60Hz CVT	1600 x 1200@60Hz DMT
	1280 x 720@60Hz DMT	1280 x 960@60Hz DMT
	1280 x 800@60Hz DMT	1400 x 1050@60Hz CVT
	1280 x 768@60Hz CVT	1280 x 1024@60Hz DMT
	Channels	2
	Consumption	< 9W
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

8. Single-Channel DL-DVI input card

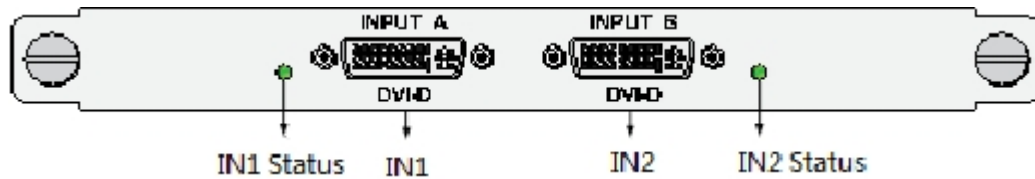


The Single Channel Dual Link DVI Input Card is able to convert PC DVI signals to digital signals. It supports up to 4088 x 4088 (4K) resolution, can auto-sense the dynamic switching of different resolutions thereby optimizing quality. Because of its modular design, it is more easily integrated into users' existing systems.

- Supports Dual-Link DVI signal input
- Supports up to 4088 x 4088 (4K) resolution and is backward compatible
- Auto-senses change in resolution
- Supports EDID management and editing
- Hot swappable

Type	Description	
Connector	24+5 pin Male, DVI-I	
Specification	Input Signal	DVI 1.0
	Level	T.M.D.S 2.9~ 3.3V
	Impedance	50 Ohm
	Frame rates	Up to 15 frames at 4088 x 4088
	Bandwidth	330MHz
	Channels	1
	Consumption	Below 7W
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg

9. *Dual-Channel DL-DVI input card

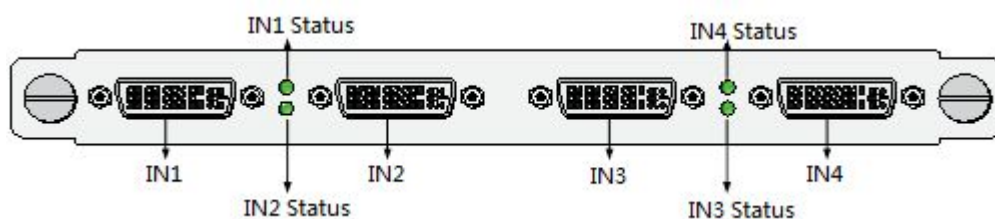


The Dual channel Dual Link DVI Input Card is able to convert PC DVI signals to digital signals. It Supports up to 4088 x 4088 (4K) resolution, while auto-sensing the dynamic switching of different resolutions and optimizing their quality. Because of its modular design, it is more easily integrated into users' existing systems.

- Supports Dual-Link DVI signal input
- Supports up to 4088 x 4088 (4K) resolution and is backward compatible
- Auto-senses changes in resolution
- Supports EDID management and editing
- Supports signal cropping
- Hot swappable

Type	Description	
Connector	24+5 pin Male, DVI-I	
Specification	Input Signal	DVI 1.0
	Level	T.M.D.S 2.9~ 3.3V
	Impedance	50 Ohm
	Resolutions	Up to 4088 x 4088 (4K)
	Bandwidth	165MHz
	Channels	2
	Consumption	< 7W
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

10. Quad-Channel DVI input card (Single Link)



The Quad-Channel DVI Input Card is able to convert PC DVI signals to digital signals. It Supports up to 1920 x 1200 resolution, while auto-sensing the dynamic switching of different resolutions and optimizing their quality. Because of its modular design, it is more easily integrated into users' existing systems.

- Supports up to 1920 x 1200 resolution and is backward compatible
- Auto-senses changes in resolution
- Supports EDID management and editing
- Supports signal cropping
- Hot swappable

Type	Description		
Connector	24+5 Pin DVI-I, Male (DVI-I)		
Specification	Input Signal	DVI 1.0	
	Resolution		
	1920 x 1200@60Hz	1440 x 900@60Hz	1280 x 720@60Hz
	1920 x 1080@60Hz	1400 x 1050@60Hz	1024 x 768@60Hz
	1680 x 1050@60Hz	1280 x 1024@60Hz	800 x 600@60Hz
	1600 x 900@60Hz	1280 x 960@60Hz	
	Bandwidth	165MHz	
	Level	T.M.D.S 2.9V~3.3V	
	Impedance	50 Ohm	
	Consumption	<7W	
	Channels	4	
Environmental	Operating Temp.	0-70C°	
	Operating Humidity	<80°	
Physical	Type	Blade	
	N.W	0.3 Kg	
	Dimension-WHD	192 mm x 168 mm x 21mm	

11. Dual-Channel HDMI input card



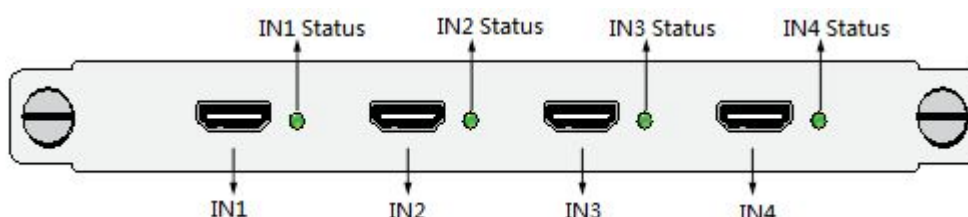
The Dual Channel HDMI Input Card is able to convert Blue-ray DVD HDMI signals to digital signals. It Supports up to 1920 x 1200 resolution, while auto-sensing the dynamic switching of different resolutions and optimizing their quality. Because of its modular design, it is more easily integrated into users' existing systems.

- Supports HDMI 1.3 and is backward compatible
- Supports up to full 1080P resolution
- Supports HDCP
- Auto-senses changes in resolution
- Supports signal cropping
- Hot swappable

Type	Description	
Connector	HDMI Type A, male	
Specification	Input Signal	HDMI 1.3/ DVI 1.0
	Level	T.M.D.S 2.9~ 3.3V

	Impedance	50 Ohm	
	Resolutions	HDTV 1920 x 1080@60 Hz 1080p@24/25/50/60	HDPC 1920 x 1200@60 Hz 720p@50/60, 576p@50 or 480p@60
	Channels	2	
	Consumption	< 7.9W	
Environmental	Operating Temp.	0-70C°	
	Operating Humidity	<80°	
Physical	Type	Blade	
	N.W	0.3 Kg	
	Dimension-WHD	192 mm x 168 mm x 21mm	

12. Quad-Channel HDMI input card



The Quad-Channel HDMI Input Card is able to convert Blue-ray DVD HDMI signals to digital signals. It Supports up to 1920 x 1200 resolution, while auto-sensing the dynamic switching of different resolutions and optimizing their quality. Because of its modular design, it is more easily integrated into users' existing systems.

- Supports HDMI 1.3 and is backward compatible
- Supports up to full 1080P resolution
- Supports HDCP
- Auto-senses changes in resolution
- Supports signal cropping
- Hot swappable

Type	Description		
Connector	HDMI Type A, male		
Specification	Input Signal	HDMI 1.3/ DVI 1.0	
	Level	T.M.D.S 2.9~ 3.3V	
	Impedance	50 Ohm	
	Resolutions	HDTV 1920 x 1080@60 Hz 1080p@24/25/50/60	HDPC 1920 x 1200@60 Hz 720p@50/60, 576p@50 or 480p@60
	Channels	4	
	Consumption	< 9W	
Environmental	Operating Temp.	0-70C°	
	Operating Humidity	<80°	
Physical	Type	Blade	
	N.W	0.3 Kg	
	Dimension-WHD	192 mm x 168 mm x 21mm	

13. *Quad-Channel TP input card

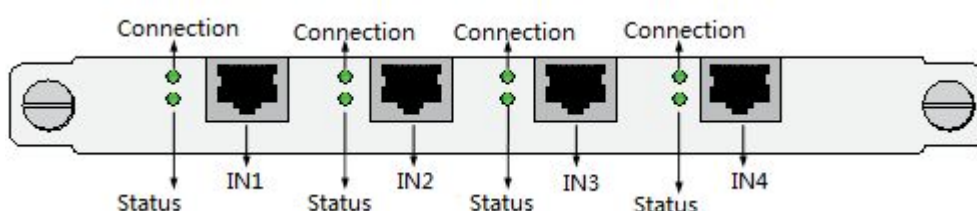


Embedded with a high-quality Equalizer chip which can be combined with a Driver chip, this Quad-Channel TP input card is capable of transmitting DVI signals up to 60 meters via Cat5, Super Cat5 and Cat6 TP cables.

ATTENTION: This card uses an RJ45 connector; employ the cable accordingly. This card must be combined with DVI-UTP-TX devices. For more details, contact our sales department or representative.

Type	Description	
Connector	4x RJ45	
Specification	Resolution	Up to 1920 x 1200 @60
	Sequence	568A or 568B
	Distance	1900 x 1200 or 1080p@60Hz CAT 5/5e/6/7 STP.....Up to 45 meters CAT 5/5e/6/7 UTP.....Up to 35 meters 1024 x 768 or 720p/1080i@60Hz CAT 5/5e/6/7 UTP or STP.....Up to 60 meters
	Channels	4
	Channels	4
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

14. Quad-Channel HDBaseT input card



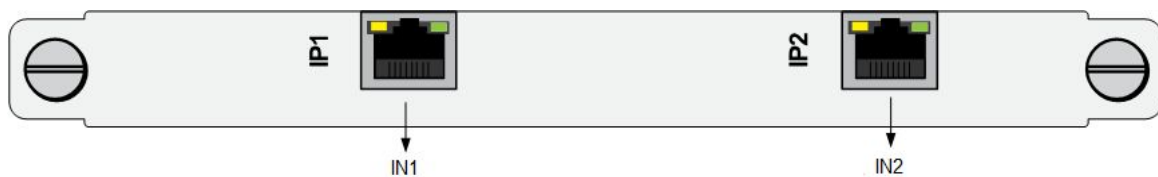
The Quad-Channel HDBaseT Input Card is capable of transmitting DVI signals up to 100 meters (330 ft.) via Cat6 cable.

This card is embedded with an HDBaseT receiver chip, and can be combined with other devices embedded with transmitter/sender chips.

Type	Description	
Connector	4x RJ45	
Specification	RJ45 sequence	568A or 568B
	Distance	100 meters
	Resolution	

	1920 x 1200@60Hz	1440 x 900@60Hz	1280 x 720@60Hz
	1920 x 1080@60Hz	1400 x 1050@60Hz	1024 x 768@60Hz
	1680 x 1050@60Hz	1280 x 1024@60Hz	800 x 600@60Hz
	1600 x 900@60Hz	1280 x 960@60Hz	
Environmental	Operating Temp.	0-70C°	
	Operating Humidity	<80°	
Physical	Type	Blade	
	N.W	0.3 Kg	
	Dimension-WHD	192 mm x 168 mm x 21mm	

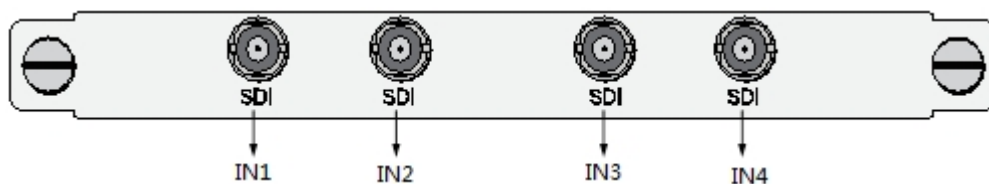
15. *Dual-Channel IP Streaming Decoder input card U20



Traditional security system applications require the use of a PC with a DVI capture card. This requirement has become obsolete because it results in system instability and vulnerability, leaving the entire system susceptible to viruses and blue screens. we bypass the need for a PC with the development of its Dual Chanel IP Decoder Card. With this card, users are able to route any RTSP video source protocol-supported IP cameras to the displays.

Type	Description	Notes
Connector	Dual-Channel RJ45	10M/100M/1000M Self-adaptive
Specification	Single Port	Supports up to 2x 1080p, 8x 720p, 18x D1 or 32x CIF signals;
	Video	H.264/RTSP (Please contact a DigiBird technician to confirm compatibility of your IP Camera prior to your purchasing decision.)
	Boot-up time	< 30s N.A
Environmental	Temp.	0-70°C N.A
	Humidity	<80° N.A
Physical	Type	Blade mode N.A
	N.W	0.3 Kg N.A
	Dimension-WHD	192 mm x 168 mm x 21mm N.A

16. Quad-Channel SDI input card



The Quad-Channel SDI Input Card is able to capture SDI signals. Commonly used in Broadcast TV, the types of SDI signals can be divided into SD-SDI, HD-SDI and 3G-HDI. This card supports SD-SDI and HD-SDI capturing. Adopting double buffering technology to avoid asynchronous situations, this card also supports real-time auto-sensing of input resources.

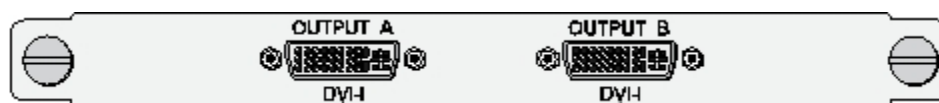
This card supports a maximum transmitting distance of 70 meters with HD-SDI and 120 meters with SD-SDI.

Type	Description	
Connector	4x BNC	
Specification	Resolution	SD-SDI: 480i@60, 576i@50, 408p@60, 576p@50 HD-SDI: 720p@50, 720p@60, 1080p@30, 1080p@24, 1080p@25, 1080i@50, 1080i@60 Does not supports 3G-SDI(e.g. 1080P/60)
	Level	2.0Vp-p
	Impedance	75 Ohm
	Channels	4
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

PART II: OUTPUT CARDS

1. Dual-Channel DVI output card T10

(For the T20, contact a our sales representative)



The Dual channel DVI Output Card is able to convert digital signals to DVI-I signals. It Supports up to 1920 x 1200/ 60 Hz resolution and up to 4 screen layouts. The card is also able to output VGA signals via DVI to VGA adaptor.

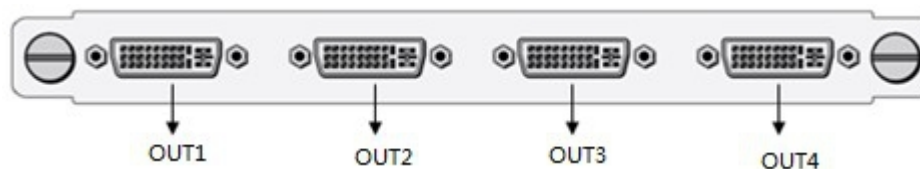
- Supports up to 1920 x 1200/60Hz resolution and is backward compatible
- DVI-I connector, supports VGA signals output via DVI to VGA adaptor
- Supports up to 4 screen layouts
- Supports arbitrary moving and layering of windows
- Supports Multi-channel sync output

Type	Description	
Connector	24+5 pin DVI-I Male	
Specification	Input Signal	DVI 1.0/ VGA
	Level	T.M.D.S 2.9~ 3.3V (DVI) ; 0.7Vp-p (VGA)
	Impedance	50 Ohm (DVI); 75 Ohm (VGA)
	Resolutions	Up to 1920 x 1200@60Hz
	Bandwidth	165MHz
	Channels	2
	Consumption	< 13W
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°

Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

2. Quad-Channel DVI output card T10

(For the T20, contact a our sales representative)

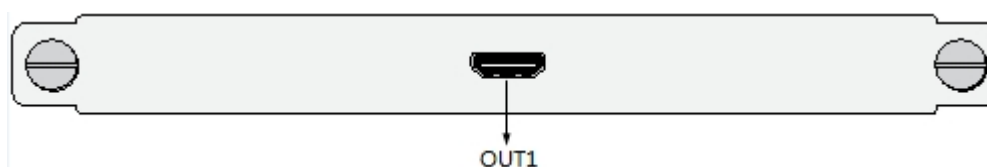


The Quad-Channel DVI Output Card is able to convert digital signals to DVI-I signals. It Supports up to 1920 x 1200/ 60 Hz resolution and up to 4 screen layouts for each channel. It is also able to output VGA signals via DVI to VGA adaptor.

- Supports up to 1920 x 1200/ 60Hz resolution and is backward compatible
- DVI-I connector, supports VGA signals output via DVI to VGA adaptor
- Supports up to 4 screen layouts
- Supports arbitrary moving and layering of windows
- Supports Multi-channel sync output

Type	Description	
Connector	24+5 pin DVI-I Male	
Specification	Input Signal	DVI 1.0/ VGA
	Level	T.M.D.S 2.9~ 3.3V (DVI); 0.7Vp-p (VGA)
	Impedance	50 Ohm (DVI); 75 Ohm (VGA)
	Resolutions	Up to 1920 x 1200@60Hz
	Bandwidth	165MHz
	Channels	4
	Consumption	< 13W
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 x 168 mm x 21mm

3. Single-Channel 4K HDMI output card



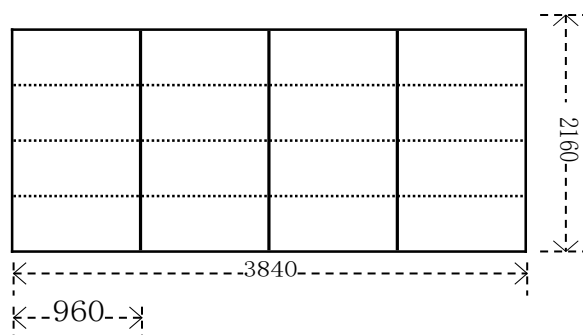
The Single Channel 4K HDMI Output Card supports up to 3840 x 2160/ 30Hz (4K) resolution, up to 16 screen layouts, and supports HDCP.

- Supports up to full 3840 x 2160/ 30Hz resolution

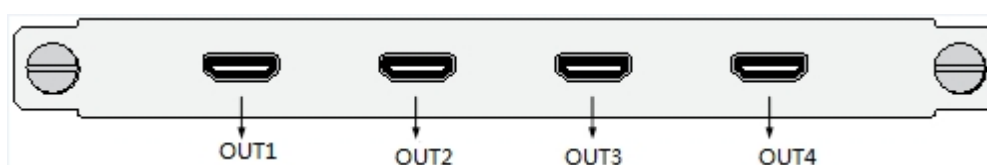
- Supports HDCP
- Supports signal cropping
- Hot swappable, plug and play

Type	Description	
Connector	HDMI Type A	
Specification	Output Signal	HDMI
	Level	T.M.D.S 2.9~ 3.3V
	Impedance	50 Ohm
	Bandwidth	297MHz
	Channels	1
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

Resolution:



4. Quad-Channel HDMI output card



The Quad-Channel HDMI Output Card supports standard HDMI resolutions: 1920 x 1080@60/50/30/25/24 Hz, 1280 x 720 @60/50 Hz, 720 x 576@50 Hz and 720 x 483@ 60 Hz, etc.; it supports up to 4 screen layouts for each channel; supports arbitrary moving and layering of windows; supports multi-channel images sync output.

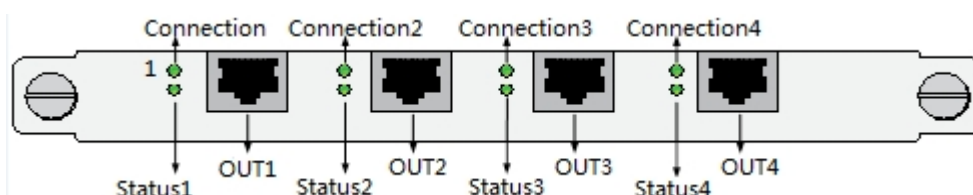
- Supports standard HDMI output
- Supports HDCP

Type	Description	
Connector	HDMI Type A	
Specification	Output Signal	HDMI
	Level	T.M.D.S 2.9~ 3.3V
	Impedance	75 Ohm
	Bandwidth	165MHz

	Resolution	Up to 1920 x 1080/ 60 Hz
	Channels	4
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

5. Quad-Channel HDBaseT output card T10

(For the T20, contact a our sales representative)



The Quad-Channel HDBaseT Output Card is capable of transmitting DVI signals up to 100 meters (330 ft.) via Cat6 cable. This card is embedded with an HDBaseT receiver chip.

Type	Description	
Connector	4x RJ45	
Specification	RJ45 sequence	568A or 568B
	Distance	100 meters or 330 ft
	Resolution	Up to 1920 x 1200/ 60 Hz
Environmental	Operating Temp.	0-70C°
	Operating Humidity	<80°
Physical	Type	Blade
	N.W	0.3 Kg
	Dimension-WHD	192 mm x 168 mm x 21mm

V. PRODUCT MODELS

Main Chassis

Model	iSEMC-T2U	iSEMC-T3U	iSEMC-T6U	iSEMC-T8U	iSEMC-T12U	iSEMC-T24U
Chassis	2U	3U	6U	8U	12U	24U
CPU Card	1	1	1	1	1	1
Switch Backplane	0	0	1	1	1	2
Input Slots	3	6	8	10	21	38
Output Slots	2	2	4	9	18	36
Function Slots	0	1	1	1	2	0
PSU slots	2	1	2	5	5	5
PSU Quantity	2	1	1 Default, 1 Optional	1 Default, 4 Optional	1 Default, 4 Optional	2 Default, 4 Optional
Max SD Streaming Video Inputs	48	96	128	160	336	608
Max HD Streaming	12	24	32	40	84	152

Inputs						
Max Displays	8	8	16	36	72	144

CPU Card

The CPU card has single 10/100MBase-Tx, single RS232 input serial port (DB9 female connector), single RS232 input serial port (DB9 male connector), and also supports network and serial port control and encryption functions.

Input Cards

Support the following input signals, including VGA, DVI-D, Dual-Link DVI-D, HDMI, SD-SDI, HD-SDI, CVBS, HDBaseT, YPbPr/YCbCr, Twist-Pair and Fiber. Any combination is acceptable.

Output Cards

Support the following output signals, including DVI-I, twisted pair and HDBaseT. Any combination is

Confidence Monitoring Cards

Monitoring Cards	The cards can be configured as a confidence monitor for the video wall controller. The monitor can show up to 32 windows per display. (iSEMC T24U doesn't support this function.)
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Accessories

200W Power Supply	For iSEMC-T2U
300W Redundant PSU	For iSEMC-T6U, iSEMC-T8U, iSEMC-T12U and iSEMC-T24U
450W Redundant PSU	For iSEMC-T6U, iSEMC-T8U, iSEMC-T12U and iSEMC-T24U
Adapter & Cable (Optional)	DB-15 Male to 8 BNC Female Connector cable. Can be applied to connect to a 16 CVBS Input Card. DVI-I Analog Male to VGA Female Adapter

Control Methods

TCP/IP	The Windows-based graphic user interface, Video Wall Controller, supports Windows
Serial-based Control serial port.	isemc controllers can be controlled by a command line through an RS-232
Third-Party	isemc controllers are compatible with most control systems manufactured by third
Mobile Terminal	isemc provides specialized control apps for hand held wireless devices such as iPad®, iPhone®, Windows Phone®, and Android™ phones.

Video and Image Processing

Any Rectangular Video Wall Configuration can be supported. Screen order can be configured. One Screen can open up to four HD windows

Inputs (windows) can be resized, layered and positioned across screen boundaries.

Inputs (windows) can be displayed in correct aspect ratio, stretched to fit, in full screen mode, or zoomed in to emphasize details.

Input sources can be cropped to remove the edge pixels and lines.

Dual-Link DVI Input (capture) cards support 4K ×4K resolution or a customizable resolution. Any source can be captured.

Chars OSD (on screen)	User-definable characters can be added to any
--------------------------	---

Environmental

Mod	2U, 3U,	8U, 12U,
Max operating temp.	50 °C	70 °C
Operating	0 °C to +50	0 °C to +70
Storage temp.	-25 to +85°C	
Operating	< 90% (Non-	

Power Consumption

Mod	2	3	6	8	12	24
Max Power Consumption	90W	200W	600W	1200W	1200W	1500W

Mechanical-Dimensions without Rack Mount Ears: (WDH) (mm) and Weight (Kg)

2U	3U	6U	8U	12U	24U
482.6×315×89.2		440×320×2	440×430×35	460×430×53	440×450×10
10	12	18	24	36	72

Input Voltage

Input Voltage Range	100 - 240 VAC auto ranging 50/60 Hz, 450W maximum, hot-swappable N+1 redundant power supply units up to four PSUs.
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1. iSEMC T2U Video Wall Controller

All connections to the Video Wall Controller are located on the rear of the unit. The types and positions of input and output modules are shown for example only; the actual module configuration will vary from system to system according user's requirements.

The following figure illustrates the rear of the Video Wall Controller iSEMC T2U.



iSEMC T2U Rear view when fully populated with HDMI Cards



On the back of the iSEMC T2U chassis, inputs and outputs are numbered from top to bottom. The top rows of the

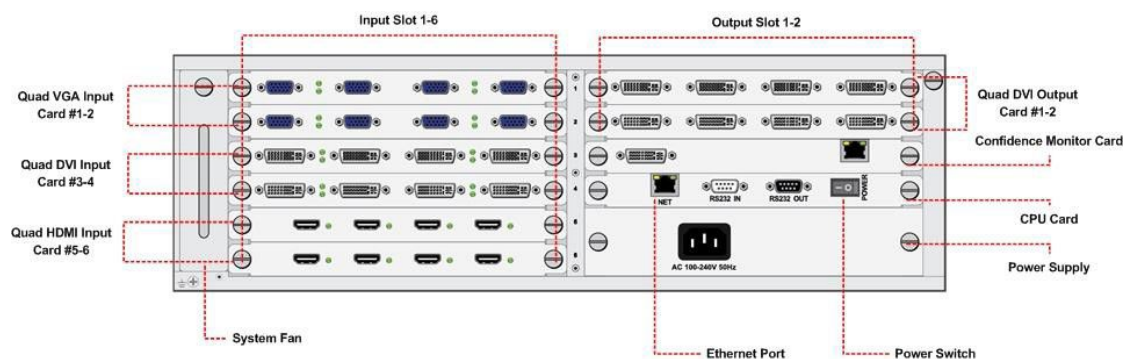
module host input channels 1-4 and output channels 1-4. Output modules are numbered from top to bottom with ports numbered from left to right.

The iSEMC T2U is the ideal video wall solution for both residential and commercial installations. It is widely used in home theaters, retail stores, shown rooms, class rooms, building lobbies and conference rooms. The iSEMC T2U is also a 4K multiviewer when populated with 4K HDMI output cards. Users can also create a 4K solution by opening four 1080p windows on a 4K monitor or projector.

Specification:

Three (3x) Input Slots supporting hot-swappable input cards Two (2x) Output Slots supporting hot-swappable output cards One (1x) default Power Supply and one (1x) Redundant Power Supply Up to 8-screen video wall
Up to 32x windows per video wall
Up to 12x High-Definition streaming video inputs
CMC (Confidence Monitoring Card) Slot not supported

2. iSEMC T3U Video Wall Controller



Six (6x) Input Slots supporting hot-swappable input cards
Two (2x) Output Slots supporting hot-swappable output cards One
200 Watt Power Supply
Up to 8-Screen Video Wall
Up to 32x Windows per Video Wall
Up to 24x High-Definition Streaming Video Inputs
1x CMC (Confidence Monitoring Card) Slot

3. iSEMC T6U Video Wall Controller

Eight (8x) Input Slots supporting hot-swappable input cards

Four (4x) Output slots supporting hot-swappable output cards

One Hot-Swappable Redundant Power Supply in addition to one default power supply

Up to 16-Screen Video Wall

Up to 64x Windows per Video Wall

Up to 32x High-Definition Streaming Video Inputs;

1x CMC (Confidence Monitoring Card) Slot



4. iSEMC T8U Video Wall Controller

Ten (10x) Input Slots supporting hot-swappable input cards

Nine (9x) Output Slots supporting hot-swappable output cards

Up to four (4x) Hot-Swappable Redundant Power Supplies in addition to one default power supply

Up to 36-Screen Video Wall

Up to 144x Windows per Video Wall

Up to 40x HD Inputs

Up to 160x SD Inputs

1x CMC (Confidence Monitoring Card) Slot



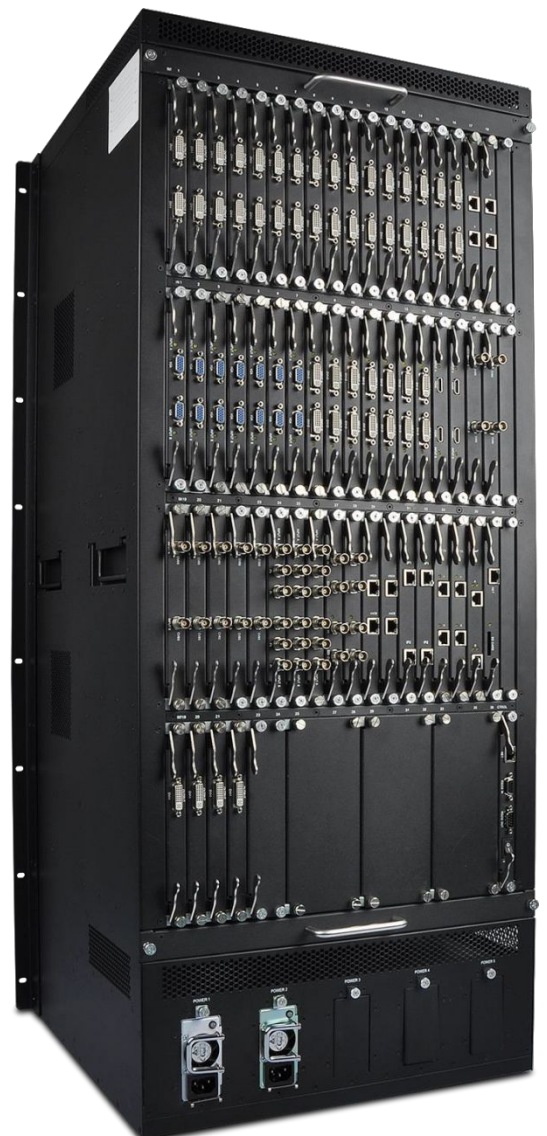
5. iSEMC T12U Video Wall Controller

- 21x Input Slots supporting hot-swappable input cards
- 18x Output Slots supporting hot-swappable output cards
- Up to 4x Hot-Swappable Redundant Power Supplies in addition to one default power supply
- Up to 72-Screen Video Wall
- Up to 288x Windows per Video Wall
- Up to 84x HD Inputs
- Up to 336x SD Inputs
- 2x CMC (Confidence Monitoring Card) Slots



6. iSEMC-T24U Video Wall Controller

- 38x Input Slots supporting hot-swappable input cards 36x
- Output Slots supporting hot-swappable output cards
- Up to four (4x) hot-swappable redundant Power Supplies in addition to one default power supply
- Up to 152x High-Definition inputs
- Maximum video wall configuration up to 144x displays
- Up to 608 SD inputs
- CMC (Confidence Monitoring Card) Slot not supported



VI. QUALIFICATIONS AND CERTIFICATIONS

